

*Ranges of Temperature.*—The monthly ranges will appear from an examination of above minima and maxima temperatures. The greatest daily ranges vary as follows: in New England from 21° on Mt. Washington to 31° at Burlington and Boston; Middle Atlantic States, 18° at Cape May to 29° at Norfolk; South Atlantic States, 19° at Cape Lookout to 31° at Augusta; East Gulf States, 14° at Key West to 28° at St. Marks; West Gulf States, 16° at New Orleans to 29° at Corsicana; Ohio valley and Tennessee, 20° at Cairo to 32° at Knoxville and 36° at Morgantown; Lower Lake region, 24° at Sandusky to 29° at Rochester; Upper Lake region, 20° at Chicago to 31° at Marquette; Upper Mississippi valley and Minnesota, 21° at St. Louis to 32° at Dubuque and 40° at Pembina; Lower Missouri valley, 26° at Yankton and Omaha to 29° at Leavenworth; Eastern Slope, from Dakota to northwestern Texas, 25° at Ft. Sill to 37° at Bismarck, Dodge City and McKavett; Rocky Mountains, 18° on Pike's Peak, and from 33° at Virginia City to 39° at Denver; Western Plateau, 32° at Pioche to 41° at Winnemucca; California, 18° at San Diego to 40° at Visalia; Oregon—36° at Portland to 45° at Umatilla.

*Frosts* occurred as follows: on the summit of Pike's Peak, every day; summit of Mt. Washington, from the 5th to the 13th, 25th and 26th. In *Mon ana*, on the 1st, 2d, 3d and 13th. *Dakota*, (northern portion,) on the 4th. *Iowa*, (northern portion,) on 2d, 10th, 22d. *Wisconsin*, (northern portion,) on 8th, 9th, 12th, 21st; 22d, injured vegetation at Neillsville. *Michigan*, (northern portion,) on 4th, 5th, 6th, 8th and 9th. *Illinois*, (central portion,) 22d. *Ohio* and *Pennsylvania*, (interior,) on 6th and 7th. *West Virginia*, 7th. *New York*, (northern portion,) 6th, 7th, and 26th injured vegetation. *Connecticut*, (northern portion,) 6th. *Massachusetts*, 5th and 7th, heavy, injured vegetation. *Vermont* and *New Hampshire*, 7th, severe, injured vegetation. *Maine*, (northern portion,) 2d and 7th.

*Ice* is reported to have formed at Summit, Col., on the 30th,  $\frac{1}{2}$  inch in thickness.

## PRECIPITATION.

On chart No. III is illustrated the general distribution of the rain-fall for the month. On the left side of same chart will be found a table giving the average precipitation for June by districts.

*Special Heavy Rains.*—1st and 2nd, Guttenburg, Ia., 3.70 in.; Plattsmouth, Neb., 2.98 in.; Ames, Ia., 3.43 in.; Clear Creek, Neb., 2.58 in.; Independence, Ia., 4.05 in.; Tabor, Ia., 2.50 in. 4th, Terrell, Kaufman Co., Tex., 4th to 7th, 7.50 in.; Ft. Griffin, Tex., 3rd to 5th, 4.97 in., 2.05 in. in 3 $\frac{1}{2}$  hours. 7th, Smithville, N. C., 2.89 in.; Green Spring, Ala., 7th to 8th, 2.79 in. 8th, Mill Village, N. H., 2.30 in.; Colebrook, Conn., 8th to 9th, 2.24 in.; Auburn, N. H., 3.00 in. 12th, Yankton, Dak., 12th to 13th, 3.20 in.; Point Pleasant, La., 12th to 14th, 16.55 in.; Brookhaven, Miss., 12th to 13th, 3.70 in.; Terrell, Tex., 4.50 in. 13th, Green Spring, Ala., 12th to 14th, 4.30 in.; Charleston, S. C., 2.39 in.; Montgomery, Ala., 12th to 13th, 4.20 in. in 24 hours; near Fayette, Miss., 3.40 in. 14th, Breckenridge, Minn., 1.67 in. in forty minutes. 15th, Ft. Barrancas, Fla., 14th to 17th, 9.50 in. 16th, Austin, Tex., 2.50 in. in two hours. 17th, Goldsboro, N. C., 17th to 19th, 3.85 in.; Dover, Del., 3.00 in.; Atco, N. J., 17th to 18th, 2.68 in.; Mt. Solon, Va., 17th to 18th, 2.55 in.; Danville, Ky., 5.00 in.; Vineland, N. J., 17th to 18th, 2.88 in.; Ft. Whipple, Va., 17th to 18th, 4.01 in.; Barnegat, N. J., 17 to 18th, 3.10 in.; Louisville, Ky., 2.81 in.; Washington, D. C., 17th to 18th, 4.09 in.; Sandy Spring, Md., 17th, 18th, 3.59 in. 18th, Cape Lookout, N. C., 3.17 in.; Durbarton, N. H., 18th, 19th, 2.69 in.; Ft. McKavett, Tex., over 2.00 in. in two hours. 19th, Ft. Larned, Kan., 6.00 in. 20th, Escanaba, Mich., 3.04 in.; Marquette, Mich., 5.76 in.; Iowa City, Ia., 2.29 in. 21st, Cumberland, Md., 2.20 in.; Colebrook, Conn., 2.87 in.; near Arlington, Ind., 20th to 21st, 2.25 in. 22nd, Springfield, Mass., 3.79 in.; New London, Conn., 1.95 in., in four hours. 23rd, Mt. Desert, Me., 23rd to 24th, 2.70 in.; Orono, Me., 22nd to 24th, 2.50 in.; Mechanic's Falls, Me., 22nd to 23rd, 2.25 in.; North Platte, Neb., 2.10 in.; Eastport, Me., 2.48 in. 27th, Springfield, Mass., 27th to 28th, 2.40 in.; Austin, Tex., 27th to 28th, 4.04 in. 28th, Independence, Ia., 2.70 in.; near Melissa, Tex., 5.10 in. 29th, Guttenburg, Ia., 28th to 29th, 2.62 in.; Afton, Ia., 28th to 30th, 4.45 in.; Corning, Mo., 29th to 30th, 4.30 in.; Logan, Ia., 29th to 30th, 6.00 in.; Des Moines, Ia., 2.73 in.; De Soto, Neb., 28th to 29th, 4.59 in.; Ames, Ia., 28th to 30th, 3.44 in.; near Howard, Neb., 28th to 30th, 7.61 in.; Memphis, Tenn., 1.00 in 40 minutes. 30th, Tabor, Ia., 29th to 30th, 2.97 in.; Lebanon, Mo., 2.95 in.; Plattsmouth, Neb., 29th to 30th, 2.66 in.; Omaha, Neb., 29th to 30th, 3.20 in.; Ft. Barrancas, Fla., 3.00 in.

*Largest Monthly Rain-falls.*—Point Pleasant, Tensas county, La., 18.23 inches; Terrell, Kaufman county, Tex., 17.13 in.; Fort Barrancas, Fla., 13.88 in.; near Melissa, Collin county, Tex., 13.59 in.; Trinidad, Col., 12.82 in.; Clarksville, Tex., 12.50 in.; Jacksboro, Tex., 10.91 in.; Logan, Iowa, 10.61 in.; Clear Creek, Neb., 10.22 in.; Fort Griffin, Tex., 10.19 in.; near Brookhaven, Miss., 9.75 in.; Plattsmouth, Neb., 9.64 in.; near Howard, Neb., 9.58 in.

*Smallest Monthly Rain-falls.*—At Sacramento, Fresno and Monterey, Cal., and Yuma, Arizona, none; Red Bluff, San Francisco and Visalia, light sprinkles, too small to measure; Umatilla, Or., 0.02 inches; Pioche, Nev., 0.04 in.; Santa Barbara, Cal., 0.05 in.; Camp Verde, Arizona, 0.06 in.; Los Angeles and Yreka, Cal., 0.07 in.; Camp McDermitt, Nev., 0.12 in.; Portland, Or., 0.13 in.; San Diego, Cal., 0.16 in.; Olympia, Or., 0.24 in.; Rio Grande, Tex., 0.27 in.

*Floods.*—June 1st, Milwaukee and Menomonee rivers overflowed banks. 2nd, along Turkey river, Iowa, three bridges were washed away; also much damage along Platte river, Nebraska. 3rd, Des Moines river, at Des Moines, Iowa, very high, indicating severe floods northward; R. R. tracks overflowed and city partly

flooded. *Missouri river*—7th to 9th, at Omaha, 17 feet, 6 inches. (18 inches above danger line.) R. R. track submerged. flats covered: Omaha smelting and refining works flooded, current of river within 150 feet: at Leavenworth, 17 feet, 2 inches, water nearly over island opposite city, threatening wheat crop here and at Kansas city. 11th, threatening to form a new channel at Kansas city. 13th, Omaha, flats covered until date; no serious damage to smelting works; current of river has changed to within 150 feet of said works. 20th to 22nd, at Omaha, 17 feet, 2 inches, flats covered, R. R. tracks submerged; smelting works partly flooded; river full of logs. 23rd, Omaha, river undermined old warehouse at foot of Fornan street, and about one-third of entire building went down river. 29th, Omaha, flats covered; R. R. tracks submerged; smelting works flooded and fires extinguished.

*Drought*.—Jamaica, W. I., crops suffering from severe drought, the usual seasonal rains not having set in, (excepting showers of the 3rd.) West Charlotte, Vt., 6th, vegetation nearly stopped growing; grass drying up.

*Hail*.—Ft. Stevenson, Dak., 2nd; Sidney Bks., Neb., 1st; Camp Sheridan, Neb., 6th; Ft. Wingate, N. M., 11th; Ft. Union, N. M., 16th; Ft. Griffin, Tex., 3rd; Ft. Fred Steele, Wy. Ty., 2nd, 10th; Ft. Fetterman, Wy. Ty., 10th, 17th, 21st, 28th; Summit, Col., 4th to 8th, 12th, 15th, 17th, 23rd; Olivet, Dak., 1st; near Forsyth, Ga., 4th; Gainesville, Ga., 9th; Como, Ill., 20th; Guttenburg, Ia., 6th; near Ft. Madison, Ia., 20th; Iowa City, Ia., 2nd, 19th; Vail, Ia., 29th; Nora Springs, Ia., 1st; Pt. Pleasant, La., 17th; near Woodstock, Md., 4th; Fallston, Md., 12th; Owing's Mills, Md., 10th; New Bedford, Mass., 5th; Springfield, Mass., 12th; Fall River, Mass., 13th; Norfolk, Neb., 29th; Plattsmouth, Neb., 19th; Clear Creek, Neb., 1st, 19th; near Genoa, Neb., 2nd, 29th; Contoocookville and Auburn, N. H., 13th; Starkey, N. Y., 6th; Wappinger's Falls, N. Y., 12th; South Hartford, N. Y., 13th; Goldsboro' and Wilmington, N. C., 9th; Fayetteville, N. C., 4th; Jacksonburg, Ohio, 6th, 7th; Westchester and New Castle, Pa., 11th; Chambersburg, Pa., 13th; Anderson, S. C., 9th; McMinnville, Tenn., 28th; Woodstock, Vt., 12th; Lunenburg, Vt., 12th, 27th; Newport, Vt., 23rd; Mt. Solon, Va., 28th; Wytheville, Va., 8th; Embarrass, Wis., 30th; Salt Lake City, Utah, 1st; Lead City, Dak., 1st, 2nd, 17th, 30th; Cheyenne, Wy. Ty., 13th, 25th; Pike's Peak, Col., (sleet?), 4th, 8th, 10th, 11th, 17th to 19th, 21st, 25th, 27th; Dodge City, Kan., 12th, 15th; North Platte, Neb., 8th, 12th; Castroville, Tex., 8th; Ft. McKavett, Tex., 18th; Mobile, Ala., 4th; Pembina, Dak., 18th; Burlington, Ia., 1st; Milwaukee, Wis., 14th; Morgantown, W. Va., 8th, 11th; Savannah, Ga., 8th; Mt. Washington, N. H., 23rd; New London, Conn., 12th; Virginia City, Mont., 9th.

*Rainy Days*.—The number of days on which rain or snow has fallen varies, as follows: New England, 8 to 17; Middle States, 7 to 15; South Atlantic States, 6 to 14; Gulf States, 8 to 16; Ohio valley and Tennessee, 9 to 15; Lower Lake region, 8 to 15; Upper Lake region, 9 to 13; Upper Mississippi valley, 11 to 15; Lower Missouri valley, 11 to 13; Eastern Slope, 9 to 19; Rocky Mountain Stations, 11 to 22; Western Plateau, 0 to 10; Pacific coast, 0 to 5.

*Cloudy Days*.—New England, 6 to 15; Middle States, 6 to 15; South Atlantic States, 8 to 12; Gulf States, 4 to 13; Ohio valley and Tennessee, 6 to 13; Lower Lakes, 7 to 12; Upper Lakes, 7 to 12; Upper Mississippi valley, 8 to 14; Lower Missouri valley, 6 to 13; Eastern Slope, 4 to 8; Rocky Mountain Stations, 1 to 12; Western Plateau, 0 to 4; Pacific coast, 0 to 13.

*Snow fell*—on Mt. Washington, 10th, 11th, and 12th. Pikes Peak, Col., on the 4th, 5th, 6th, 7th, 12th, 16th, 17th, 20th, 23rd and 27th; the snow-storm of the 16th was unusually heavy; average depth of snow on summit plaza, at end of month, from numerous measurements, is 24 inches.

## RELATIVE HUMIDITY.

The average percentage of relative humidity for the month ranges as follows: New England, 62 to 80; Middle States, 62 to 83; South Atlantic States, 65 to 70; Gulf States, 65 to 80; Ohio valley and Tennessee, 60 to 69; Lower Lakes, 62 to 71; Upper Lakes, 68 to 77; Upper Mississippi valley, 61 to 71; Lower Missouri valley, 64 to 72; Eastern Slope, 67 to 76; Western Plateau, 29 to 39; Pacific coast, 34 to 76. High stations report as follows: Mt. Washington, 84; Pike's Peak, 68; Santa Fe, 36; Denver, 49; Cheyenne, 58; Virginia City, 48.

## WINDS.

The prevailing winds at the Signal Service stations are shown by the arrows, flying with the wind, on chart No. II. The *Maximum* velocities, in miles per hour, have been given in the description of the movements of low-pressure areas. On Mt. Washington the highest velocity, NW. 84 miles, was recorded on the 6th, and the total movement of the air was not obtained.

*Total Movements of the Air*.—The following are the *largest* monthly movements recorded at the Signal Service stations, viz: Pike's Peak, 11,431 miles; Cape Lookout, 10,436; North Platte, 9,911; Cape May, 9,420; Barnegat, 9,010; Sandy Hook, 8,877; Dodge City, 8,752; San Francisco, 8,711; Sandusky, 8,302, and Indianola, 7,906. The *smallest* are: Lynchburg, 2,068 miles; Visalia, Cal., 2,213; Virginia City, Mont., 2,581; Knoxville, 2,658; Vicksburg, 2,842; Roseburg, Or., 2,858; Montgomery, 3,006; Lead City, Dak., 3,067; Nashville, 3,098; Leavenworth, 3,131; Augusta, 3,137; Los Angeles, 3,158, and Springfield, 3,247.